

***If you are using a printed copy of this procedure, and not the on-screen version, then you MUST make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A***

# C-A OPERATIONS PROCEDURES MANUAL

### 15.5.11 Booster Bakeout Procedure

(Vacuum Group Procedure VA-008.18.1.11)

Note: This document was formerly a C-A Group Procedure. The content of the group procedure was reviewed by the Technical Supervisor. All approvals and/or issue dates of the original group procedure are maintained for present use.

### Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>

Approved: Signature on File \_\_\_\_\_  
 Collider-Accelerator Department Chairman Date \_\_\_\_\_

M. Mapes

Vacuum Group Procedure VA-008.18.1.11  
Original Issue Date: 01/01/00  
Revision 01

## **Day #1**

1. After system has been roughed with the portable turbo station and leak checked, set up RGA with the oscilloscope as outlined in section 8.7 on page 69 of the RGA manual. (There is a wiring diagram on page 23). Take an RGA scan (search for nitrogen, oxygen, and argon peaks). Repair leaks as necessary.
2. Set ion gauge emission current to .01 ma and turn on ion gauge to verify gauge operation. Turn off gauge until step 3 is complete.
3. Start bakeout program and verify TC readouts on computer are reading ambient temperature. Program bakeout to maintain 50 degrees C and wait until temperature stabilizes for at least one hour. Ramp the temperature an additional 50 degrees until the desired bake temperature is reached (225 degrees C) each time letting the temperature stabilize for at least one hour.
4. Take an RG- scan after temperature has stabilized late in the day. Record any data such as temperature, pressure, and time etc.

## **Day #2**

1. Take RGA scan in the morning and late in the day.

## **Day #3**

1. Take an RGA scan and compare to previous scans noting any changes.
2. Degas each ion gauge filament at 1- watts for 15 minutes.
3. Flash ion pump until pressure starts to drop.
4. Degas Titanium pump at 33 watts for 20 minutes for each filament
5. Degas each RGA- filament
6. Take RGA scan at end of day.

## **Day #4**

1. Take an RGA scan and compare to previous day.
2. With temperature at 225 degrees C degas the first filament of each ion gauges at 10 watts for 20 minutes, then degas the second filament at 20 watts for 2W minutes, also degas RGA.
3. Flash ion pump until pressure starts to drop.
4. Degas titanium pump filaments by applying 35 amps for 20 minutes to each filament.
5. Drop temperature to 100 degrees C and let stabilize.
6. Take RGA scan and evaluate.
7. Degas gauges, RGS and pumps following steps 2 thru 4. (Except when degassing ion gauges use 20 watts for both filaments)
8. Drop power to blankets and let system cool.
9. When temp drops to 50= C take RGA scan and evaluate.
10. Flash titanium by applying 48 amps of current to one filament for 7 minutes.
11. Monitor pressure. When pressure reaches low 9 range turn on ion pump, then valve out turbo. Pressure should continue to drop until low 11 range is reached. Take RGS scan and evaluate.

**BOOSTER VENTING PROCEDURE:**

- 1) Go to 930UEB and close sector valves, shut off and tag ion pumps, shut off and disconnect all ion gauge cables to sector being vented. Station a tech to monitor pirani gauge.
- 2) Disconnect adjacent sector valves in ring.
- 3) Connect turbo to metal valve. Use copper gasket.
- 4) Connect short side of heater "wreath" to vent side of LN2 tank. Do not over tighten.
- 5) Plug heater into variac: set to 75 volts.
- 6) Purge heater wreath
- 7) Connect heater to turbo vent using copper extension tube; bend extension tube (not heater) to fit. Do not over tighten.
- 8) Open turbo vent valve.
- 9) Start turbo and open inlet valve. (Pump out snake + heater) Tighten fittings as necessary to reach  $< 10^{-2}$  torr.
- 10) Shut off turbo.
- 11) Turn on variac.
- 12) Open (vent side) valve on LN2 tank. (Backfill heater + snake)
- 13) Open metal valve.
- 14) Call tech at 930UEB X5014. Do not over-pressure sector.